[10191/2289]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:		: Examiner: Andrew T. Sever
	Peter KNOLL et al.	:
For:	DISPLAY APPARATUS	:
Filed:	July 19, 2002	: Art Unit: 2851
Serial No.:	10/088,727	:

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APPEAL BRIEF PURSUANT TO 37 C.F.R. § 1.192(a)

SIR:

In the above-identified patent application ("the present application"), Appellants mailed a Notice Of Appeal on November 5, 2004, which was filed by the Office on November 8, 2004, from the Final Office Action issued by the U.S. Patent and Trademark Office on August 5, 2004, so that the two-month appeal brief due date is January 8, 2005. The two-month appeal brief filing date has been extended by one month from January 8, 2005 to February 8, 2005 by the accompanying Transmittal And Petition To Extend. In the Final Office Action, claims 16 to 42 were finally rejected.

An Amendment After A Final Office Action was mailed on September 24, 2004, and an Advisory Action was mailed on October 5, 2004.

In accordance with 37 C.F.R. § 1.192(a), this Appeal Brief is being submitted in triplicate in support of the appeal of the final rejections of claims 16 to 42. It is respectfully submitted that the final rejections of these claims should be reversed for the reasons set forth below.

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1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is Robert Bosch GmbH ("Robert Bosch") of Stuttgart in the Federal Republic of Germany. Robert Bosch is the assignee of the entire right, title and interest in the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no interferences or other appeals related to the present application, which "will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal".

3. STATUS OF CLAIMS

1. Claims 16 to 26 and 31 to 42 were finally rejected under 35 U.S.C. § 103(a) as unpatentable over Jost et al., U.S. Patent No. 4,919,517 (the "Jost" reference) in view of Kleinschmidt, U.S. Patent No. 6,750,832 (the "Kleinschmidt" reference).

2. Claims 27 to 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over the "Jost" reference in view of the "Kleinschmidt" reference and further in view of Hwang et al., U.S. Patent No. 6,317,170 (the "Hwang" reference).

A copy of the appealed claims is attached hereto in the Appendix.

4. STATUS OF AMENDMENTS

In response to the Final Office Action mailed on August 5, 2004, Appellants filed an Amendment After A Final Office Action, which was mailed on September 24, 2004.

5. SUMMARY OF THE INVENTION

The exemplary embodiments and/or methods of the presently claimed subject matter are described as follows in the context of the present application.

The display apparatus according to the present invention may be used to display a variety of images and data in a vehicle. In addition to vehicle parameters such as, for example, engine speed, vehicle speed, and the ambient temperature of the vehicle, it may be possible to display the image from a camera, e.g. the image from a rear or side camera as well

as the image from an infrared camera. Display of the image acquired by the infrared camera may allow a vehicle user to obtain a good overview of the road even when visibility conditions are poor, e.g. in fog or darkness. In addition, the display apparatus may also serve as an output unit of a navigation apparatus for display of a route to be traveled. In an example embodiment, a display surface may be arranged at least in the vicinity of the windshield, and may be readable by a driver of the vehicle and by a passenger. Also it may be possible to arrange a display apparatus according to the present invention in such a manner that a passenger who is not in the first row of seats of the vehicle may read the display, for example by the fact that a display surface is arranged directly in front of a user's seat. All that may be necessary for this purpose may be to provide a corresponding projection unit for that display surface at a suitable location on the vehicle roof. (See specification, page 4, lines 18 to 40).

Figure 1 shows an example embodiment in which a projection unit 1 may be arranged on a vehicle roof 2. A display surface 4 may be arranged on a mount 5 on an instrument panel 3. A light beam 6 that may be radiated from projection unit 1 to display surface 4 may be deflected by display surface 4 in the direction of a user, as illustrated by an arrow 7. Instrument panel 3 may be adjacent one on side to a windshield 8 that extends from instrument panel 3 to vehicle roof 2. Instrument panel 3 encloses a dashboard of the vehicle. A steering wheel 9 may be also arranged on instrument panel 3. (See specification, page 5, lines 1 to 11).

In an example embodiment, projection unit 1 may be mounted immovably on vehicle roof 2. In an example embodiment, the voltage supply line and the data line may be integrated into vehicle roof 2 in a manner not visible to a user, and may be guided out of the vehicle roof through a door frame. Light beam 6 that passes from projection unit 1 to display surface 4 extends approximately parallel to windshield 8. A driver generally does not reach into this region, so that light beam 6 may be not interrupted by the driver. In an example embodiment, display surface 4 may be embodied as a diffusing display surface, which may be constituted e.g. by roughening an outer surface of a transparent plastic material. Display surface 4 may be a highly reflective surface that is as white as possible and, in an example embodiment, may be covered with a surface material that exhibits approximately the properties of a Lambert radiator. In an example embodiment, display surface 4 may be

constituted by a suitable film that may be applied onto mount 5. Mount 5 is moreover adjustable as to its angle of inclination, so that the direction of the observer (arrow 7) may be set by tilting mount 5 to the observer's eye level. In an example embodiment, display surface 4 is covered with a film that may allow directed emission of the light. This prevents light from being emitted, for example, toward the windshield. (See specification, page 5, lines 13 to 36).

In the example embodiment of Figure 2, a projection unit 10 may be arranged on an inside mirror 11. A mirror surface 12 of inside mirror 11 may be arranged on a side of inside mirror 11 facing away from windshield 8. Mirror surface 12 conceals projection unit 10 from a user as completely as possible, so that projection unit 1 is not visible to a user of the vehicle and thus is not intrusive. (See specification, page 6, lines 1 to 8).

Figure 3 illustrates an electrical circuit of a display apparatus according to the present invention. Signals of a video camera 21 and from vehicle sensors 22 may be acquired by a control unit 20. The signals of video camera 21 and vehicle sensors 22 may be processed in control unit 20 and forwarded for display to an image processing unit 23. In an example embodiment, image processing unit 23 may have a digital filtration and calculation unit 24 with which the image signals acquired by video camera 21 may be optionally digitally processed, and with which the vehicle variables ascertained by vehicle sensors 22, e.g. vehicle speed, engine speed, and outside temperature, may be converted into a visual depiction. Image processing unit 23 furthermore may have an activation unit 25 that transmits image data to projection unit 1 and controls projection unit 1. In an example embodiment, video camera 21 may be arranged behind a radiator grille at the front end of the vehicle, thus making possible unobtrusive observation of the area in front of the vehicle. In an example embodiment, video camera 21 may be arranged in the interior of the vehicle, may be in the region of the inside mirror, so that observation of the road may be performed from the interior of the vehicle. Vehicle sensors 22 may be arranged in the vehicle at suitable points provided therefor. In an example embodiment, control unit 20 and image processing unit 23 may be arranged in the dashboard of the vehicle or in vehicle roof 2. In an example embodiment, video camera 21 may be embodied as an infrared camera, with which image

acquisition may be possible even in poor visibility conditions such as darkness and fog. (See specification, page 6, lines 10 to 38).

Figure 4 illustrates an example embodiment of a projection unit 1. A first laser unit 31, a second laser unit 32, and a third laser unit 33 may be arranged in a housing 30. First laser unit 31 produces red light, second laser unit 32 green light, and third laser unit 33 blue light. In an example embodiment, the laser units may be embodied as semiconductor lasers or solid-state lasers. A first laser beam 41 of first laser unit 31 may be emitted onto a first mirror 51, with which first laser beam 41 may be deflected toward display surface 4. Similarly, second laser beam 42 may be directed onto a second mirror 52, and third laser beam 43 onto a third mirror 53. Mirrors 51, 52, 53 may be modifiable, via piezoelements, in terms of their angle of inclination in two spatial directions about rotation axes lying in the plane of the respective mirror, so that scanning of display surface 4 by laser beams 41, 42, and 43 may be ensured by the mirrors. The use of the three colors red, green, and blue may allow generation of a color image. In an example embodiment, instead of the three laser units 31, 32, 33 illustrated in Figure 4 it may be possible to use only one laser unit of one specific color. This makes possible a monochrome display in the specific color. In an example embodiment, light deflection may be accomplished with a micromechanical mirror display (DMA = digital mirror display). (See specification, page 7, lines 1 to 24).

Figure 5 illustrates another example embodiment of a projection unit according to the present invention. A light source 44 may emit white light, e.g. a halogen light source, and may be arranged in a housing 40. The light of light source 44 may be emitted through a liquid crystal cell 45 and through a lens 46 toward display 4. Liquid crystal cell 45 comprises individual image points whose light transmission may be influenced by an electrical activation system. By appropriate activation of the image points, an image may be generated by liquid crystal cell 45. The spacing between liquid crystal cell 45 and lens 46 may be selected, in conjunction with the focal length of lens 46, in such a manner that the image generated by liquid crystal cell 45 is imaged onto display surface 4. Both the projection unit illustrated in Figure 4 and that illustrated in Figure 5 may be used as a projection unit 1 on the vehicle roof or as a projection unit 10 on an inside mirror. (See specification, page 7, line 26 to page 8, line 2).

In an example embodiment, display surface 4 may be configured as a flat surface. In an example embodiment, display surface 4 may be protected from soiling or damage by a fold-down cover. Figures 6a and 6b illustrate an example embodiment of a semi-spherical display surface 50. Semi-spherical display surface 50 may be embodied as a semi-spherical elevation above instrument panel 3. Figure 6a illustrates a view from the direction of the viewer at the height of instrument panel 3. Figure 6b illustrates a plan view onto semi-spherical display surface 50 from the position of projection unit 1 or 10. The semi-spherical configuration makes possible display of an image over a wide spatial angle. As a result, an image may be seen both by a driver of the vehicle and by a passenger. It may be possible for a passenger sitting farther back in the vehicle to read from semi-spherical surface 50, which may be covered with a light-diffusing film or a light-diffusing layer. To ensure that the semi-spherical configuration does not result in distortion of the displayed image, in an example embodiment a prior computational distortion of the image, in which projection onto semi-spherical display surface 50 may be taken into account, may be accomplished in image processing unit 23. (See specification, page 8, lines 4 to 25).

In Figures 7a and 7b, a display surface may be divided into a first surface portion 61 and a second surface portion 62. Figure 7a illustrates a view onto surface portions 61 and 62 from a viewer's height corresponding to the height of instrument panel 3. Figure 7b illustrates a plan view from the position of projection unit 1 or 10. An image for a driver may be projected onto first surface portion 61, and an image for a passenger onto second surface portion 62, so that different images may be displayed for the driver and the passenger. In addition to an example embodiment of surface portions (illustrated in Figures 7a and 7b) having a triangular base outline, it may be possible to provide surface portions having a rectangular or trapezoidal display surface, or to space the surface portions apart. (See specification, page 8, line 27 to page 9, line 2).

Figure 8a illustrates an example embodiment of a display apparatus according to the present invention in which the image projected onto a display surface 4 may be deflected by display surface 4 toward windshield 8. A semi-reflective layer 70, with which light is deflected toward observer 7, may be provided on windshield 8. Reflection onto semi-reflective layer 70 creates for an observer a virtual image that appears to an observer to be

located on the side of windshield 8 facing away from the observer. It may be possible to use a layer that reflects, and deflects to an observer, only light of a defined polarization direction of light beam 6 that is reflected from display surface 4. A polarization direction of the light emitted from projection unit 1 or 10 must, in this context, be adapted to the polarization direction of the semi-reflective layer, or vice versa. In an example embodiment, it may be possible to dispense entirely with a semi-reflective layer and to generate an image solely by way of a reflection at windshield 8. In Figure 8a, display surface 4 may be embodied so as to deflect as much light as possible directly toward reflective surface 70, and as little light as possible directly to an observer, in order to achieve the brightest possible virtual image. The display surface may have a light-diffracting, light-refracting, reflective, or light-diffusing structure, as well as a combination of said structures. (See specification, page 9, lines 4 to 28).

Figure 8b illustrates an example embodiment of such a structure. A light beam 6 strikes display surface 4, which may be constituted by a first layer 81 and a second layer 82. The boundary surface between first layer 81 and second layer 82 may be formed by sawtooth shapes 83. As a result of differently selected refractive indices, total reflection of light beam 6 at the boundary surface between first layer 81 and second layer 82 occurs at an interface from first layer 81 to second layer 82. This makes possible directed light deflection toward a viewer or, depending on the orientation of sawtooth shapes 83, toward reflective layer 70. First layer 81 and second layer 82 may be made from a plastic material. In an example embodiment, the structure may be introduced into second layer 82 holographically, e.g. by laser light. Instead of the sawtooth shapes illustrated in Figure 8b, symmetrically configured prisms or other structures may be possible, for example an example embodiment as a Fresnel lens. In an example embodiment, prism or sawtooth shapes may also be applied onto an outer surface of a display surface by injection molding. (See specification, page 9, line 30 to page 10, line 8).

In summary, the present invention is directed to a display apparatus in a vehicle, including: a projection unit arranged at least one of on a vehicle roof and on an inside mirror of the vehicle; and a display surface, which is outside the projection unit, onto which a real image is generated by the projection unit. (See claim 16).

The present invention is also directed to a display apparatus in a vehicle, including: a projection unit arranged at least one of on a vehicle roof and on an inside mirror of the vehicle; and a display surface, which is outside the projection unit, onto which a real image is generated by the projection unit; wherein the projection unit includes a liquid crystal display, and the image displayed on the liquid crystal display is imaged on the display surface. (See claim 33).

6. ISSUES

1. Under 35 U.S.C. § 103(a), are claims 16 to 26 and 31 to 42 unpatentable over Jost et al., U.S. Patent No. 4,919,517 (the "Jost" reference) in view of Kleinschmidt, U.S. Patent No. 6,750,832 (the "Kleinschmidt" reference)?

2. Under 35 U.S.C. § 103(a), are claims 27 to 30 unpatentable over the "Jost" reference in view of the "Kleinschmidt" reference and further in view of Hwang et al., U.S. Patent No. 6,317,170 (the "Hwang" reference)?

7. GROUPING OF CLAIMS

Issue 1 - Group 1: Claims 16 to 26 and 31 to 42 stand or fall together as to the obviousness rejections as to these claims.

Issue 2 - Group 1: Claims 27 to 30 stand or fall together as to the obviousness rejections as to these claims.

8. ARGUMENT

Issue 1 – Obviousness Rejections as to Claims 16 to 26 and 31 to 42

Claims 16 to 26 and 31 to 42 were rejected under 35 U.S.C. § 103(a) as unpatentable over Jost et al., U.S. Patent No. 4,919,517 (the "Jost" reference) in view of Kleinschmidt, U.S. Patent No. 6,750,832 (the "Kleinschmidt" reference).

Claims 16 and 33 provide for the generation of a real image onto a display surface on the instrument panel of the vehicle via a projection unit arranged on a vehicle roof and/or on

an inside mirror of the vehicle. In this context, this is to *generate* a *real image*. Due to the placement of the projection unit in the roof of the vehicle, an appropriate space-saving projection is possible. In comparison to a backwards projected real image, for example, little space is required. Also, in contrast to a virtual image, the dependence on the viewing angle of a viewer is greatly reduced.

The references relied upon simply do not disclose or suggest the projection of a real image. Even the projection, as mentioned in the Final Office Action, using a curved mirror does not make it possible to show a real image on the mirror itself. With regard to this, the Final Office Action has mentioned the toy in which a coin appears to hover in an oval shape. If one reaches for the coin, one reaches into empty space. There is no real image. *One can see that even from the fact that a movement of the head displaces the image of the coin. However, if it were a real image, the projected image would always remain stationary upon changing the viewing angle.*

In particular, the "Jost" reference purportedly concerns an image-reproducing device for a motor vehicle. The "Jost" reference states that a real image is represented as a virtual image in the user's field of vision via a lens and the windshield following the lens in the path of the light rays. In the "Jost" reference, the real image and the lens are arranged at an upper edge of the windshield. Furthermore, a mirror element is arranged between the lens and the windshield within an area of the surface of an instrument panel. The "Jost" reference states that since the mirror element is arranged at a large distance from the lens element, the virtual image falling into the eye of the vehicle user is matched to the respective prevailing conditions. (Abstract, lines 1 to 13).

Accordingly, the "Jost" reference, whether taken alone or combined, does not disclose or suggest the features in which *a real image is generated* onto a display surface on the instrument panel of the vehicle via a projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle, as provided for in the context of claims 16 and 33. The "Jost" reference merely indicates that a image-reproducing device provides a displayed image as a virtual image on the windshield via a mirror. Accordingly, the image is perceived by a viewer as a virtual image. The image shown in the liquid crystal display is not directly visible to a viewer, who can only perceive the virtual image. The "Jost" reference does not disclose a

real image that is generated onto a display surface outside the projection unit. Nothing in the "Jost" reference discloses or suggests the claim features of generating a real image onto a display surface on the instrument panel of the vehicle via a projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle, as provided for in the context of claims 16 and 33.

It is respectfully submitted that the obviousness rejections are not sustainable because it is based on the Final Office Action wrongly asserting that the projection surface according to "Jost" is suitable for generating a real image. To project a real image, a mirror surface cannot be used, for the light beams of the real image would only be diffracted by the mirror surface, so that a real image would not be visible for the observer. Hence light-diffusing surfaces are used as a projection surface for real images, so that the real image can also be projected onto this surface. By contrast, reflective surfaces, such as, for example, the windshield, are not suitable for the projection of real images. They can only be used to generate virtual images by a suitable deflection of light. Accordingly, it is respectfully requested that the obviousness rejections be withdrawn for these further reasons.

Additionally, the "Kleinschmidt" reference purportedly concerns an information display system with an output display, an optical device for deflecting an illumination beam path into a user's field of vision. The subdividable output display allows a user to partly obtain information in a vehicle via a head-up display and partly via a traditional or back-projection display. (Abstract, lines 1 to 10). Furthermore, the "Kleinschmidt" reference states that "FIG. 23 shows the combination of FIG. 19 and FIG. 20 with expansions" such that "[t]he virtual head-up display VINST/NRSP and the real, back-projected image are thus displayed combined on the diffuser DIF." (Col. 15, lines 6 to 9).

Accordingly, the "Kleinschmidt" reference does not disclose or suggest, whether taken alone or combined with the primary reference, the features in which *a real image is generated* onto a display surface on the instrument panel of the vehicle via a *projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle*, as provided for in the context of claims 16 and 33, whether taken alone or with the "Jost" reference. The "Kleinschmidt" reference merely indicates that an image is generated and displayed by rear projection unit. Nothing in the "Kleinschmidt" reference, whether taken alone or combined

with the primary "Jost" reference, discloses or suggests the claim features of generating a real image onto a display surface on the instrument panel of the vehicle via a projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle, as provided for in the context of claims 16 and 33.

For the foregoing reasons, the combination of the "Jost" reference and the "Kleinschmidt" reference does not describe or suggest the features of claims 16 and 33, so that claims 16 and 33 are allowable.

Claim 17 to 26, 31 and 32 depend from claim 16, and are therefore allowable for the same reasons as claim 16.

Claim 34 to 42 depend from claim 33, and are therefore allowable for the same reasons as claim 33.

Issue 2 – Obviousness Rejections as to Claims 27 to 30

Claims 27 to 30 were rejected under 35 U.S.C. § 103(a) as unpatentable over the "Jost" reference in view of the "Kleinschmidt" reference and further in view of Hwang et al., U.S. Patent No. 6,317,170 (the "Hwang" reference).

Claims 27 to 30 depend from claim 16, and are therefore allowable for essentially the same reasons as claim 16, as explained above, since the "Hwang" reference does not cure the critical deficiencies of the "Jost" reference and the "Kleinschmidt" reference, as explained above. The "Hwang" reference only refers to a projection unit which uses a laser arrangement. There is no suggestion in the references relied upon to show the virtual image as a real image via a projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle, as provided for in the context of claim 16. The system of the "Hwang" leads away from the presently claimed subject matter, since it replaces the liquid crystal display image with a laser image, so that even if the references are combined (the properness of which is not conceded), the resulting combination still does not provide for displaying a real image on a display surface outside of the projection unit arranged on a vehicle roof and/or on an inside mirror of the vehicle, such that claim 16 is allowable, as are its dependent claims 27 to 30.

As further regards all of the obviousness rejections, to reject a claim under 35 U.S.C. § 103(a), the Office bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim features. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). Since the references relied upon do not disclose or even suggest all of the features of the rejected claims as explained above, it is respectfully submitted that these claims are allowable.

It is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Office Action's generalized assertions that it would have been obvious to combine or modify the reference do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon.

In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [subject matter].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Final Office Action offers only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify the reference to provide the claimed subject matter and its benefits to address the problems met thereby, and it is respectfully submitted that the assertions to date in this regard are insufficient since the Office must provide proper evidence of a motivation or suggestion for modifying a reference to provide the claimed subject matter.

In short, there is no evidence that the references relied upon, whether taken alone, combined or modified, would provide the features of the claims discussed above. It is therefore respectfully submitted that the claims are allowable for these reasons.

As further regards all of the obviousness rejections of the claims, it is respectfully submitted that not even a *prima facie* case has been made in the present case for obviousness, since the Office Actions to date never made any findings, such as, for example, regarding in any way whatsoever what a person having ordinary skill in the art would have been at the time the claimed subject matter of the present application was made. (See *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998) (the "factual predicates underlying" a *prima facie* "obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art")). It is respectfully submitted that the proper test for showing obviousness is what the "combined teachings, knowledge of one of ordinary skill in the art, and the nature of the

problem to be solved as a whole would have suggested to those of ordinary skill in the art", and that the Patent Office must provide particular findings in this regard — the evidence for which does not include "broad conclusory statements standing alone". (See *In re Kotzab*, 55 U.S.P.Q. 2d 1313, 1317 (Fed. Cir. 2000) (citing *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999) (obviousness rejections reversed where no findings were made "concerning the identification of the relevant art", the "level of ordinary skill in the art" or "the nature of the problem to be solved"))). It is respectfully submitted that there has been no such showings by the Office Actions to date or by the Advisory Action.

In fact, the present lack of any of the required factual findings forces both Appellants and this Board to resort to unwarranted speculation to ascertain exactly what facts underlay the present obviousness rejections. The law mandates that the allocation of the proof burdens requires that the Patent Office provide the factual basis for rejecting a patent application under 35 U.S.C. § 103. (See *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967))). In short, the Examiner bears the initial burden of presenting a proper prima facie unpatentability case — which has not been met in the present case. (See *In re Oetiker*, 977 F.2d 1443, 1445, 24, U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)).

It is therefore respectfully requested that the obviousness rejections as to all of the claims be reversed.

Accordingly, it is respectfully submitted that claims 16 to 42 are allowable for the above reasons.

CONCLUSION

In view of the above, it is respectfully requested that the rejections of claims 16 to 42 be reversed, and that these claims be allowed as presented.

Respectfully submitted,

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APPENDIX

1-15. (Canceled).

16. (Previously Presented) A display apparatus in a vehicle, comprising:

a projection unit arranged at least one of on a vehicle roof and on an inside mirror of the vehicle; and

a display surface, which is outside the projection unit, onto which a real image is generated by the projection unit.

17. (Previously Presented) The display apparatus according to claim 16, wherein the display surface is arranged on an instrument panel adjacent to a windshield.

18. (Previously Presented) The display apparatus according to claim 17, wherein a structural pattern is arranged on the display surface, and light is deflected by the structural pattern.

19. (Previously Presented) The display apparatus according to claim 18, wherein the light is deflected in the direction of a viewer.

20. (Previously Presented) The display apparatus according to claim 18, further comprising:

a reflective surface, arranged adjacent to the display surface, onto which the light is deflected.

21. (Previously Presented) The display apparatus according to claim 18, wherein the structural pattern is configured as a roughening of the display surface.

22. (Previously Presented) The display apparatus according to claim 18, wherein a layer having a holographically introduced structure is arranged on the display surface.

23. (Previously Presented) The display apparatus according to claim 18, wherein an outer surface having at least one of a prism structure and a sawtooth structure is arranged on the display surface.

24. (Previously Presented) The display apparatus according to claim 23, wherein the display surface is of semi-spherical configuration.

25. (Previously Presented) The display apparatus according to claim 24, wherein the display surface includes a first surface portion for a first image and the display surface includes a second surface portion for a second image.

26. (Previously Presented) The display apparatus according to claim 25, wherein the projection unit is a video projector.

27. (Previously Presented) The display apparatus according to claim 26, wherein a light source of the projection unit is a laser beam generation unit.

28. (Previously Presented) The display apparatus according to claim 27, wherein movable mirrors are arranged in the projection unit, and light of the laser beam generation unit is deflected by the movable mirrors.

29. (Previously Presented) The display apparatus according to claim 28, wherein multiple light sources of different colors are arranged in the projection unit.

30. (Previously Presented) The display apparatus according to claim 29, wherein the path of the light from the projection unit to the display surface is at least approximately parallel to the windshield of the vehicle.

31. (Previously Presented) The display apparatus according to claim 16, wherein the display surface includes a film that allows directed emission of light and prevents light from being emitted toward the windshield.

32. (Previously Presented) The display apparatus according to claim 16, wherein the display surface scatters light.

33. (Previously Presented) A display apparatus in a vehicle, comprising:

a projection unit arranged at least one of on a vehicle roof and on an inside mirror of the vehicle; and

a display surface, which is outside the projection unit, onto which a real image is generated by the projection unit;

wherein the projection unit includes a liquid crystal display, and the image displayed on the liquid crystal display is imaged on the display surface.

34. (Previously Presented) The display apparatus according to claim 33, wherein the display surface is arranged on an instrument panel adjacent to a windshield.

35. (Previously Presented) The display apparatus according to claim 34, wherein a structural pattern is arranged on the display surface, and light is deflected by the structural pattern.

36. (Previously Presented) The display apparatus according to claim 35, wherein the light is deflected in the direction of a viewer.

37. (Previously Presented) The display apparatus according to claim 35, further comprising:

a reflective surface, arranged adjacent to the display surface, onto which the light is deflected.

38. (Previously Presented) The display apparatus according to claim 35, wherein the structural pattern is configured as a roughening of the display surface.

39. (Previously Presented) The display apparatus according to claim 35, wherein a layer having a holographically introduced structure is arranged on the display surface.

40. (Previously Presented) The display apparatus according to claim 35, wherein an outer surface having at least one of a prism structure and a sawtooth structure is arranged on the display surface.

41. (Previously Presented) The display apparatus according to claim 35, wherein the path of the light from the projection unit to the display surface is at least approximately parallel to the windshield of the vehicle.

42. (Previously Presented) The display apparatus according to claim 35, wherein:

the display surface is of a semi-spherical configuration;

the display surface include a first surface portion for a first image and the display surface include a first surface portion for a second image;

the projection unit includes a video projector;

a light source of the projection unit includes a laser beam generation unit;

movable mirrors are arranged in the projection unit, and light of the laser beam generation unit is deflected by the movable mirrors;

multiple light sources of different colors are arranged in the projection unit; and

the path of the light from the projection unit to the display surface is at least approximately parallel to the windshield of the vehicle.